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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,604	01/11/2002	James Fraivillig	07009.011002	1887
22511	7590	07/22/2005	EXAMINER	
OSHA LIANG L.L.P. 1221 MCKINNEY STREET SUITE 2800 HOUSTON, TX 77010			TRINH, MINH N	
			ART UNIT	PAPER NUMBER
			3729	

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Tata

<b>Office Action Summary</b>	<b>Application No.</b> 10/044,604	<b>Applicant(s)</b> FRAIVILLIG, JAMES	
	<b>Examiner</b> Minh Trinh	<b>Art Unit</b> 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Receipt is acknowledged of the "conditional" request for RCE application is acceptable and a RCE has been established. An action on the RCE follows.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fraivillig (6,015,607) in view of Hoffmeyer (5,757,073).

Fraivillig discloses a method for manufacturing a PCB bonded to a heat sink comprising: a first step of: adhering a conductive layer to a first surface of a bond film using a first adhesive layer to produce a circuit substrate (as discussed in the abstract, or discussion at col. 5-6), wherein the adhering is achieved by partially activating the first adhesive layer such that the conductive layer is tack bonded to the bond film, processing the circuit substrate to produce a flexible printed circuit (see Fig. 3, col. 5, lines 60-67, col. 6, lines 1-26). Hoffmeyer discloses a second step where the laminating the heat sink 20 to a second surface of the bonded film 28 of the flexible printed circuit 12 using a second adhesive layer 26 (see Fig. 1, and the discussion at col. 5, lines 48-52). It is noted that the reference 12 is described as flexible circuit (see col. 5, line 40-42). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to employ the teaching of Hoffmeyer on the method invention of Fraivillig in order to facilitate the fabrication process including mechanical

attaching of heat sink to the flexible substrate by adhesive bonding or the like. It is also noted that a related Fig. 6 of Hoffmeyer shows a heat sink 70 being bonded to a second surface of bond film 74 by means of adhesive, etc.

As applied to claims 2-3, noting in light of Fraivillig's discussion at col. 5-6, which discloses the temperature versus pressure range as recited in these claims.

As applied to claims 4-5, it would have been an obvious matter of design choice to choose any desired materials for the first and second adhesive layer since applicant has not disclosed such different composition of the first and the second adhesive layer are critical distinguishing features and it appears that the invention would perform equally well with the adhesive compositions as provided by the prior art reference (see Fraivillig's Fig.3, reference 82).

As applied to claims 6-7, Fraivillig discloses the limitations of these claims (see related embodiment of Figs. 5-7, and the discussion at col. 6, lines 56-67, col. 7, lines 1-33). Regarding the coating of an antioxidant layer this concept is described at col. 6, lines 10-16.

Limitations of claims 8-12 are also met by Fraivillig (as discussed in the abstract and shown in Figs. 3-4, etc.,).

As applied to claims 13-15, regarding the applying of the second adhesive layer on the second surface of the bond film. It would have been an obvious matter of design choice to apply the second adhesive layer on the second surface of the bond film prior to the adhering the conductive layer to the first surface of the bond film and/or coat second adhesive layer on the second surface of the bond film prior to the laminating the

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heat sink to the second surface of the bond film, etc., since applicant has not disclosed such sequentially order are critical and patentable distinguishing features and it appears that the invention would perform equally well with the teaching as provided by the prior art reference (see Fraivillig's discussion at cols. 5-6). Furthermore, regarding the limitations of claims 13-15, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the second adhesive layer on the second surface of the bond film prior to the adhering the conductive layer to the first surface of the bond film and/or that as recited in claims 14-15, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art. *In re Stevens*, 101 USPQ 284 (CCPA 1954).

#### ***Prior Art References***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Prior art references are cited for their teaching of method of manufacturing flexible PCB with bonded heat sink thereof.

#### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Trinh whose telephone number is (703) 305-2887. The examiner can normally be reached on Monday -Thursday 8:00 am to 4:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mt  
7/15/05



**MINH TRINH**  
**PRIMARY EXAMINER**